

SEQUENCE LISTING

<110> Wilkinson, Jack
 McBride, Kevin
 Bertain, Sean

<120> GENETIC CONSTRUCTS HAVING HETEROLOGOUS
 3' POLYADENYLATION SIGNAL SEQUENCE MOTIFS THAT FUNCTION IN
 PLANTS

<130> 0325.210

<150> 60/390,529

<151> 2002-06-20

<160> 65

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 485

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 1

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cacaccttag aactaaaact taataaataa atattttctct atcttttaaag gcacatatta 180
cgtgggctaag gcaattacag ctgatatact gtaaaactca tgtcgccact aaattcttct 240
aacacgcgtt ctgtctcttt ccaagggact ccgaatatgc cactatttat ctgtggcatt 300
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tcttcacttg ttcgagtttt gtcttttgct tctctaaagg tcttcaattt atctaaagca 420
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gtacc                                             485
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<210> 2

<211> 541

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 2

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gcgcgcaagt cacaagtagt agcgagttac aacaaatctt ccctgttagt caacaataag 60
atgattatgt gttgtgtact acgaaaataa gcaaaaaata aataaaataa aaacaaaaac 120
agaaacaaaa acaaaaacaa aaacaaaaac acatattgtt atgatgactg gacgaaagaa 180
agatcgtcgt tactttccta attgtttgct ttcagtacag ttattatcag tgttctcttt 240
cttttttatt gtactatgtg atgttactga tacatcacgc gcttccttta tgttttcttt 300
ttttatgttc gttacaggat ttatagtttt tacagtatat tgacttcaat aatttcta 360
attcagttcc tattaaattt gattattccg attagatcgg tcggcgctac caaaaagagg 420
cgaagaaaag aggaaaacgc aagtggataa aggggtgggg ggcaaaagta tttaagaaaa 480
agcgatgcga tggagagaac aaatggataa gttgcgtttc ctcgtaatat tacaaggtag 540
c                                             541
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<210> 3

<211> 666

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 3
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aaatagacgg cttctactat catcattaca gtaagggttg aagtcaggaa aggttaaaaa 120
taaaataaat atcaaaaagt ttttagcgga aggcgttaag gcagcaagta cacattcatt 180
tatctatcta tacatctata aacacaacta caattttttt agaaatggaa tttattatat 240
gaagggaaga catatagagg caacagtaca taaaggtaag aataaaaagcg attttagcta 300
gtatatttct ggggtatttct tacatagtct ttgtaaagca accacaccgt ttaagcttaa 360
atcttcgttc tccttgaatt tgcatagtac agcgtctaga atcaaaaatc ctagctcgcc 420
gtcatcattg ttcttgcaaa caaactcata ccacgagtcg atctcaaag ttttattcat 480
agatacacga atattgttca acgtaatcat ttcaacctcg ctgccgtttt tcgatgatat 540
ggttggcgat tgtaaaatca actgagattc agtgggttgt gatttgattt gcgctattat 600
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ggtacc 666

<210> 4
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 4
gcgcgcggaaggaggaaagt gactccttcg ttgc 34

<210> 5
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 5
ggtacctcat catttgaggg ttcaagtcac ggag 34

<210> 6
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 6
gcgcgcaagt cacaagtagt agcgagttac aac 33

<210> 7
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 7

ggtaccttgt aatataacga ggaaacgcaa cttatcc 37

<210> 8
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 8
 gcgcgccatc caagagattg tctttgtctg caag 34

<210> 9
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 9
 ggtaccagcg aaacaccaga gttgacccca cag 33

<210> 10
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 10
 ggcgcgcccta ggccaagccc tgcgtccagc gagc 34

<210> 11
 <211> 35
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 11
 cgggggtaccc cgagtcagct tgtgcaacag cgtcg 35

<210> 12
 <211> 43
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutagenic Oligonucleotide

<400> 12
 taatatacat tttatgactg aattcttttt tgtacaacac tcc 43

<210> 13
 <211> 44
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR primer

<400> 13
 ggagtgttgt acaaaaaaga attcagtcac aaaatgtata ttac 44

<210> 14
 <211> 44
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutagenic oligonucleotide

<400> 14
 ggagtgttgt acaaaaaaga attcagtcac aaaatgtata ttac 44

<210> 15
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Mutagenic Oligonucleotide

<400> 15
 aattcacaca cacacaaaca cacacag 27

<210> 16
 <211> 510
 <212> DNA
 <213> *Saccharomyces cerevisiae*

<400> 16
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 cattttgata ttttgattaa ttaagtggta atcttaagct catatacaaa aagggaagga 120
 aaaaaaataa agatagaaaa gatcttagga acggatagag gtttgaaaaa ggaataacag 180
 gtaatttttc attttcatat cggttgtaac attataaagc tcacaaattt aaaacaaaaa 240
 aaaacataaa cctaacaagg ttaatcattt gcacatgac tcacatata gatcaattca 300
 taatctatat aataatgaat aattagaata aaaatttcct cttgtctcag aacgcccac 360
 ggatggcata actttagtta atgatcac gacggacgaa gtattgaaag acaacctaac 420
 ctgttcatca atttaaaagt caacgcagaa actataatac attgccacat agttctttcc 480
 gatatgaaca acctaactca caaaatttac 510

<210> 17
 <211> 877
 <212> DNA
 <213> *Saccharomyces cerevisiae*

<400> 17
 attaattggat gccttcaatg agttccacga cgcacgttta ttttttcgac tgagaatccc 60
 tcagcaaaata taatctatct tttatatatc tgtgtatatg taagcatgta taactagtta 120

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caaatatgat aactgctttg gcgatcactt cattttcttg agaggggtac tcagtagccg 180
ccaagcacga aatgtccgtt attaaaaatt ggggagtga tcttaaaagc ccgaaaagga 240
aattcaaaat ctgtctattt ataggccgtc gcgctctacg aaaacgcgaa attattcaaa 300
cggaaaacgg aaaaaaatct aaaaaaagaa attaattgag agatctcacg gaaatgccgc 360
gaggaatggt tctcgaggct gagcggcgtg gtctgtgcaa aaaaatggca atttttttgt 420
aggagtttgc attgggccat tcagaaggag caccgttaga tgggatggta aatgaatttg 480
ctgtttcaga tttgaatcaa tctttaccgc ttatttttgc cgttttgctt tcataatctg 540
caaattaaca aagtcataaa gaacataaag acatcacccc agtttttaca ctcttttttc 600
ctgtgtttgg ttttagcaca ctttccaata accaagtggg tttcagatca tccccatatt 660
attttctagt ttcatttact taccaaactc accattcaag gctttcaa atagttacga 720
gtacagtggg ccattttttt ctgattcttc atattttccg ttataagtct tataaggaag 780
gtatacattt atattgcgaa tttgaaaaat aatttaaagc tgactttgcg ttttaggtag 840
gctagaaaag aatacaacta tccctaaaca cattcta 877

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<210> 18

<211> 669

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 18

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tagcttttatt ggatgacttt atggaaaatt catgttttga gtataaatta tacgtacgaa 60
tcttatagat atatatattt cttttaaaac tccatttcag ctcataagcc gatacaaaaca 120
ccttctatat attattttct taacagctat gttaacatga ttgcctttgt ttatctacta 180
aaggaccctt ctactttatc taccatacgc ctatattttc tctgtgtttc aatcatatcg 240
agaaaaattt ggtacttcgt gtctaaaaga attctatctg gatgagtttt ctcatattgga 300
ttgacaattc ttgcattacc cgtttagctct tgcataactt tccatagaaa acttgtcccc 360
ttatatcttc cctctcctag gctctcctgt cccacgggtc atgaagcatc cttactactt 420
tcctcagagg ttttgtcaag tggttgttgt gtgcaaactc gaagagaata gttattttatt 480
ttggcaggcg cacttggagt tgaaagtgtg agattatgtg gggatacaaa gccatttgtc 540
gagtttgcg atctccattga taacttttgt atcgacgaat atgaatcgtt aaaacgttcc 600
gtctttgtct gagaagattt ttggcctttg agagtctctt tttccctggt ataatcaaaa 660
tcttcactt 669

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<210> 19

<211> 443

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 19

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aattgcgtcc aaagaagaag ttgaaataat cgatttatta cgatctccac aaatccaaag 60
tttgatatata tcacgatttt tttactacat atatatattc ttttctattc tatttgtaaa 120
tgaggaggaaa tcttaatatg gacctctctt cacaattgt tctataatac aatatatatc 180
aagatataat aacaagtcatt ttgagataat ggtatgcaaa tacgcgaaat aagagtaaac 240
ggatacagtg agcctgaaga ggacaagctg cttccatgtt gtagtgttta gatatatgag 300
cttaaaattt agatttactg aatattatac aatagtaatt atacataaag aaattccatt 360
ttatctgttc gatagcaatg gaagaggaga gagttctgtg aaacaaataa cagcagcaca 420
gaaaactccc gtcaacgtaa tat 443

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<210> 20

<211> 427

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 20

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agtccactct tcaccttgtc ttgaggttga ggggtggtaa ctgatcagtc ctcgcaatat 60
tttcattatg tcaatatata tatgtttact ctcccttttt ctttttgggt tttttttttt 120
tttgataaat actccataga acactaaata aattgttcaa ctgtgttatt gtctttattc 180

```

```

atgttggttt tcaagagctt ggatttttgaa tegtcttata ctatgacgtt cactattttc 240
gcgaaccggt gtaataccat tagctatttt gatagaaagg gatttttatt aggggaatata 300
accacattta aagtgtccta tcatgtttca atctccagta aacgcacata agccgaccaa 360
ttgagtcaac cttttaactc tatttaattt gatacggata gaatattgtg actaccaaaa 420
gggaaaa                                         427

```

<210> 21

<211> 810

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 21

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taagtgtcat tccgtctaca aggttaacgc ttaagtaaag tattttttaa acttatatat 60
tttaattgat cgttaaattt tgaaaaaggc ttttaatat gtcattattt acttttctat 120
ttacaacaaa agaacaattg aatagataga cagtagagga atataagtag tatgcagtgc 180
catgcgggat caaggaattt gtatctctaa ttttcgtggt tgtatgcgtc tctaaacaag 240
tcaatatttt gctgtaagat ggttctgccg ctcccttcag ttcctttaag aagcgtacct 300
gcagatattt taacatcctc catggtttca ttgactttac tgacaagtgt attgctcaag 360
tcatcaacat gtttttccca attttacta aatacttgca aaacagcatc gaatccatt 420
ttaccctttt tagcgttctc gcaaaacctt tgaactgacc aatcttccat cttattacac 480
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gccgagtcac cgggatgcgg gctatatgtt acagtctcgt agacttttaa tagattgcac 600
atcgttaaat tacagcttct catggtaag ctctttttat ttaagtctac cacagaaact 660
tctctgacat gactcatatt ggtccctcct agcatcatca tgatccattt gggaacacct 720
tgttttacag taatcaaccg ttcagtaact aagaccttac cttgatcctt caattctctt 780
cttaaaacgt ccactgcat gacatgtgta                                         810

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<210> 22

<211> 763

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 22

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tgatatagta tatcatcctt acgtatttga cgttattaca ttatatatag tttctcaa 60
aatatttcta gtttattttt gtatcataat aaaaacgtat accaaatata ccattatttt 120
tcataacatt atggtaggga tagggaatca agtaactaat ttatatccgc agagcattgg 180
gaaaaccaac ggcgctagta aatgcattta aattacgtcc gtccaacttc taagcttcaa 240
tggtagactc ttaactctga cttttttagc aattaagctc ttgaagatat caaaagtgtt 300
accgtccggc tgtaaattat aaacgtttcc tgtaaattga gtggaatacc gcttaccatt 360
cttttgcaat cagtaaaccg tagtcttccg tgataccagt aatcatggct tgcgtatttc 420
cgtgatctgg taatgttact atttggttac tatgtaacac aactcataat aacttggcaa 480
tatttcgcga gctccgtagt taataaactg ttttaatatg acctcaagg tttcatata 540
gagtgcctgc agtttttctg cttttattgc tggcaataaa tcaagggtga attgttggcg 600
ttcttcattc aggatatcaa tccaagtttg taatgaagtt gtaggaccat cactagtcaa 660
atztatacca cagccaagta gcaacaata tttattgttt atgaagtggg tattaactaa 720
taaaccagag atcttaagat aagcgggctc gatatcacct aag                                         763

```

<210> 23

<211> 498

<212> DNA

<213> *Saccharomyces cerevisiae*

<400> 23

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tgatgcttac gtttcttctg acgaagaatt ctaatctttt tgatcactgc tttcacagtt 60
ttctttaaga tttttattga tcaataattt atgtatatat taatttctat gtttttgtaa 120
tattgtttat tttggtaaaa tatagacgca acttccttat tataaagaaa ggcattattt 180
aaaagaaaaa gcgttccatt agtcagacat cttttttttt catacattct taagctcagg 240

```

```

caaattgagc attgcctcat acccttttctg gtaagaggggt aacgaaaata ttttttttggg 300
agaataaaaa taggtgacgg atcatagact aggaagcttt aaaacatgat tgagcgtaat 360
attatatcc ttctagaaaa gataaaagag ccaagacctt aaattttttt atccctgttc 420
tattaaaatt gtggaaatga ggttttttgag gggattttgta ttttctttgg ctttctactct 480
atataaagta actgccac
498

```

<210> 24

<211> 492

<212> DNA

<213> *Pichia pastoris*

<400> 24

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agtttgtagc cttagacatg actgttcctc agttcaagtt gggcacttac gagaagaccg 60
gtcttgctag attctaatac agaggatgtc agaatgccat ttgcctgaga gatgcaggct 120
tcatttttga tactttttta tttgtaacct atatagtata ggattttttt tgtcattttg 180
tttcttctcg tacgagcttg ctctgatca gcctatctcg cagctgatga atatcttgtg 240
gtagggggtt gggaaaatca ttcgagtttg atgtttttct tggattttcc cactcctctt 300
cagagtacag aagattaagt gagaccttcg tttgtgcgga tccccacac accatagctt 360
caaatgttt ctactccttt tttactcttc cagattttct cggactccgc gcacgcgcgt 420
accacttcaa aacacccaag cacagcatac taaattttcc ctctttcttc ctctaggggtg 480
tcgttaatta cc
492

```

<210> 25

<211> 876

<212> DNA

<213> *Pichia pastoris*

<400> 25

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tctaaagagt agcaattctg atgaggggct gagatatctc agcactttgt catactcact 60
tcaaaccctt gtattatcaa aaagtttctc gatgccgggg cggctaaggc tcaagtctag 120
tcagccgtgg tatcttctga actgcatcac gagttttatg cgagcattag tacggcgctt 180
tagcgattcg ggtttgtttg gttttttttt ctaaggcaat tttcaacacg attcacaaat 240
tagacagtcg cacaccgcag gttgaaaagg gggcggtact gcgcgctggt cggcttgttg 300
cctccttcta attccccgtt tgtcttccag tctattgaca ccgagggtt ctcgaactgc 360
tctatgcagt ctcttgggtt actcgtcttt tttttcccgt gggcactggg ctccctgttt 420
tagatcgctc tacttaattg atgcctgatg acgggtttgt aagcctgatc cagtagcatt 480
acttaacata taaaataaaa agtggatgag atctttcttt cgccgtttag gtcttaaaag 540
ccagtttgcg tcttaaaagg agtttgcgaa tataaatgtt cgtataagga tgaatcgtat 600
tcaaagaatt aaattgtcag aaaaactact gatgctcgca taagacatgt gatgcagtcg 660
aagatacgca tgcataatac tatatacact agctaacatc caccacatat atatatccct 720
ctccgtttat ctatttcaca cacataccaa aagctgggtt tatccgtcag acctacaacg 780
cactctcccg cttcgctttc tgccccctcg ccaactcatc caaaagcagc agccgcttat 840
ccccgaacg acttccatcc tctgttccgt caaagt
876

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<210> 26

<211> 577

<212> DNA

<213> *Pichia pastoris*

<400> 26

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actgttgcgt agacatgagc ggggctactt acagctggcc gcagtatcta catgacacat 60
catcgggtgtt gttgttgttg ttgttgttgt tgcattggtc tctgggatcg ccctttcgtc 120
gcctgtgtct cgtgtccaga cccgcgcgt ccttggctgt agtctctgta cgtatgggtt 180
tgcatttacg gccagctggg atctggcttt ttggagtta tttttgggat ttggaaagaa 240
ctacacagct tgttgcttgg agcgatgcct tggacaacaa acaggaaaat cgacggaaag 300
gatgcaataa tggacgggaa gtttagagtc cttgcattgg aggcgggcat aggcagccct 360
ggaatacaga accctgtaga gttaaggagt gtaaacaccc gacacagtat ataccaggcc 420

```

```

cctttgtctc agggcacgag ccaggggcct atagagcgat aaaaccatgc gactattgat 480
aataatgata accagcagcg catagcccag tacgaggcct tgacgtcaag gtcagtttct 540
gcagaacaat cgcattatcg aatccatgga atgcact 577

```

```

<210> 27
<211> 650
<212> DNA
<213> Pichia pastoris

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<400> 27
atcgtccacc gcaagtgcct ctaaggatat agtcgcaaaa ttgtttttta tttttggctct 60
tgagtctaata atgctcgcag ctcttgagtt gtatatggtc gttggtcgcg ttttttctgt 120
tgtattaaaa gatcaaacga gatcaaggga tggctcgcgg gctgtctctc gcactaggag 180
gaagaatgcc tgaaaaagga actttgattt tagctgtgga atagagatgg cttgtttgag 240
gacgcttgtc gcttggcgca gggacttgaa tggcagcttg tggaaaccga aggcgagaaa 300
agtcgacgga tactgtacgt ggttctattg ccagtgcggt ggaagcttgg ttgtgatata 360
gttcaatcct tctttgaate tgtttgtttc atatttgat tctctgcttg cgcattctca 420
tcttcgagaa gcgactgcag ggattgttgg ttctgtggag ctgatgagcg cgccttgacc 480
acccttgttc ttgttttgct cttttgttct catttaacct gtttctccct tccaaccctt 540
tgaccttgca acattgtctc ccagcgcggt gccaaagcga acttgatata agtatagtat 600
gaccaagtag tctacaaaaa taaatttttag tacagtattg ctagtatata 650

```

```

<210> 28
<211> 412
<212> DNA
<213> Homo sapiens

```

```

<400> 28
ccaagccctg cgtccagcga gcgtcacagc acaacctgca aaaacggagc tgggctgcag 60
ctggggctgg catggacttt catttcagag attcggtttt taagaagatg catgcctagc 120
gtgttctttt ttttttccaa tgatttgtaa tatacatttt atgactggaa acttttttgt 180
acaacactcc aataaacatt ttgatttttag gttctgcctc tgagtttatt cctgagggga 240
agctcgagcc gggcctctgc cctaatagaag cggatgtcta agaaagatcc ctccaccccc 300
aaggaaaaag gtcactggct agttagtaag gtgtaaacag gaccaggcg atgcatggga 360
ccctgccctt ttttttctag tgagcctccg acgctgttgc acaagctgac tc 412

```

```

<210> 29
<211> 308
<212> DNA
<213> Homo sapiens

```

```

<400> 29
gaagcctgca cgcggcagtt ctttgttaaa gatctgaggg actcgtcagt cctagcgtcg 60
cgcctgcag cctcttccaa gccctgcgtc cagcgagcgt cacagcacia cctgcaaaaa 120
cggagctggg ctgcagctgg ggctggcatg gactttcatt tcagagattc ggtttttaag 180
aagatgcatg cctagcgtgt tctttttttt ttccaatgat ttgtaataata cattttatga 240
ctggaaactt ttttgtacaa cactccaata aacattttga ttttaggttc tgcctctgag 300
tttattcc 308

```

```

<210> 30
<211> 363
<212> DNA
<213> Homo sapiens

```

```

<400> 30
ctagccatgg ccactgagcc ctctgctgcc ctgccagaat ctgccgcccc tccatcttct 60
acctctgaat ggccaccctt agaccctgtg atccatcctc tctcctagct gagtaaatcc 120

```



```

gggtctcttag gatgccagag gcagcgcaca caagctggga aatcctcagg gctcctacca 180
gcaggactgc ctgctgccc cacctcccgc tccttggcct gtcccagat tccttccctg 240
gttgacttga ctcatgcttg ttctactttc acatggaatt tcccagttat gaaattaata 300
aaaatcaatg gtttccacat ctctcagtgc ctctatctgg aggccaggta gggctggcct 360
tgg 363

```

```

<210> 31
<211> 341
<212> DNA
<213> Homo sapiens

```

```

<400> 31
tggtgtgtaa ttcttcagtc atggcattcg cagtgccag tgatggcatt actctgcact 60
atagccattt gcccgaactt aagtttagaa attacaagtt tcagtaatag ctgaacctgt 120
tcaaaatggt aataaagggt tcgttgcatg gtagcatact tgggtgtttg tcatgaaatt 180
ctctagtgat gtgtgggtac gcttaaaact ggtgaaaatg ttagggatt taattttgag 240
attggtaatg tgctcaaagt taagtcactt gactttggta tacacttggg tgggctgagg 300
ggcaagagcc ttctttgctg tttaagtcac tacaagttag g 341

```

```

<210> 32
<211> 29
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> PCR Primer

```

```

<400> 32
cctaggtgaa gaagagtgc tgaattttg 29

```

```

<210> 33
<211> 28
<212> DNA
<213> Artificial Sequence

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<220>
<223> PCR Primer

```

```

<400> 33
ggtaccgtaa attttgtgag ttaggttg 28

```

```

<210> 34
<211> 28
<212> DNA
<213> Artificial Sequence

```

```

<220>
<223> PCR Primer

```

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